US ERA ARCHIVE DOCUMENT





Report on Subsurface Investigation of Carboline, Ankeney Mill Road, Xenia, Ohio

For

Carboline P.O. Box 370 Xenia, Ohio 45385 Report on Subsurface Investigation of Carboline, Ankeney Mill Road, Xenia, Ohio

For

Carboline P.O. Box 370 Xenia, Ohio 45385

Report No. 12208-692-311

June 22, 1992





4516 Taylorsville Road PO. Box 51 Dayton, OH 45401-0051 513-236-8805 513-233-2016 FAX

June 22, 1992

Carboline P.O. Box 370 Xenia, Ohio 45385

Attention: Mr. Thomas W. Higgins

Dear Mr. Higgins:

Your copies of our report on the subsurface investigation we performed for you at the Carboline site on Ankeney Mill Road in Xenia, Ohio are enclosed. For your information, recommendations are given here, not in the actual report.

No methyl ethyl ketone was detected in any of the soil samples or the water sample tested. No volatile organic compounds (VOC's) were detected by SW-846 Method 8240 in Soil Sample 1-1A from Boring 1 or in the water sample from Boring 2. Toluene was detected in Soil Sample 2-1A from Boring 2 at a level of 0.2 mg/kg and in Soil Sample 3-1A from Boring 3 at a level of 16 mg/kg. Ethylbenzene and xylene were also detected in the soil sample from Boring 3, at levels of 2.4 mg/kg and 6.7 mg/kg, respectively.

All of the samples analyzed were from the top 2-1/2 feet of the borings. The sample from Boring 3, where the highest levels of VOC's were found, was native soil that seemed to be fill from under an old loading dock where the aboveground storage tanks sat. The photo-ionization detector (PID) readings indicate that paint solvents probably did not migrate downward to any great extent at the locations sampled.

Your business is appreciated; we are always glad to help you in any way we can. We look forward to working with you again soon. In the meantime, please call us if you have any questions or if we can help you in any way.

Sincerely,

Bowser-Morner Associates, Inc.

Stephen D. Sommer

Stephen D. Sommer Hydrogeologist

SDS/mwt 1-Client 2-File

BOWSER-MORNER

4518 Taylorsville Road • P.O. Box 51 • Dayton, Ohio 45401 • 513/236-8805

ENGINEERING REPORT

REPORT TO: Carboline

REPORT DATE: June 22, 1992

P.O. Box 370 -Xenia, Ohio 45385

REPORT NO.:

12208-692-311

Attention: Mr. Thomas W. Higgins

REPORT ON: Subsurface Investigation, Carboline Site, Ankeney Mill Road, Xenia, Ohio

1.0 AUTHORIZATION

Written authorization to proceed with this project was received from Mr. Thomas Higgins of Carboline on May 8, 1992. The project was conducted in accordance with our proposal and agreement dated May 6, 1992.

2.0 PURPOSE

The purpose of this investigation was to determine if paint solvents were in the soils or groundwater in the borings made on the site and to describe the hydrogeologic conditions near the location of three aboveground storage tanks at the Carboline site in Xenia, Ohio.

3.0 BACKGROUND INFORMATION

A paint and coating manufacturing facility is on the site, near Shawnee Creek in Xenia, Ohio. A mixture of toluene and methyl ethyl ketone (MEK) was spilled in the location to be investigated. The release may have affected soil and/or groundwater in the immediate area.

This investigation was intended to determine if toluene and MEK have affected soils and groundwater sampled from near the spill, and if so, to attempt to define the extent of soils and/or groundwater affected.

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4.0 HYDROGEOLOGICAL INVESTIGATION

4.1 Site Description

4.1.1 Location

The site is on Ankeney Mill Road southwest of the county fairgrounds in Xenia, Ohio. The development of surrounding area is industrial/commercial. A site location map is included in Appendix A.

4.1.2 Geography

The site lies on gently to steeply sloping land on the east side of Shawnee Creek.

Most of the surrounding area consists of industrial and commercial buildings and undeveloped land along Shawnee Creek.

4.1.3 <u>Climate</u>

The climatic conditions at the site are typical for the eastern Midwest. The mean annual temperature is 53 degrees Fahrenheit and the average annual precipitation is 39 to 40 inches. Precipitation is the major recharge mechanism for groundwater in this area. Recharge for groundwater is estimated to be provided by six inches of total annual precipitation.

4.2 Geology

4.2.1 Surface Geology

The soils on the site are developed on clayey glacial till with occasional sand and gravel lenses. These soils have low permeability and may have a seasonally high water table. The glacial till deposits in this area are 20 to 40 feet thick.



4.2.2 Bedrock Geology

The glacial outwash deposits are underlain by thin bedded limestones and calcareous shales of the upper Ordovician Richmond group.

4.3 <u>Hydrogeology</u>

4.3.1 Water Use

Most of the water in the area is used for industrial and commercial purposes.

This water is supplied by the Xenia water system.

4.3.2 Water Resources

The water resources in the area are poor. Yields of less than three gallons per minute (gpm) can be developed from the occasional sand and gravel deposits at depths of less than 40 feet.

The Ohio Department of Natural Resources water well logs for wells within one mile of the site are included in Appendix B.

5.0 SUBSURFACE INVESTIGATION

5.1 Boring and Sampling

On May 21 and 22, 1992, three borings were advanced to depths of 10.5, 8.5, and 12.5 feet at locations specified by Mr. Jim Crawford of the Ohio Environmental Protection Agency (OEPA). These borings were made to provide data on the soils, to determine the depth to groundwater, and to determine if paint solvent constituents were in the soil at the locations where Borings 1, 2, and 3 were made and groundwater from the location where Boring 2 was made.

The borings were made with a boring rig using hollow-stem augers and employing standard penetration resistance methods (140-pound hammer, 30-inch drop, two-inch-O.D.



split spoon sampler) at two-foot intervals (continuously) beginning at the ground surface directly beneath the concrete pavement. The depths where these "A"-type split-spoon samples were obtained are noted on the boring logs. Soil cuttings from the borings were placed in D.O.T.-approved drums and left on-site for the client's disposal. The boring location plan and the boring logs are included in Appendix C. When the borings were completed, they were plugged with bentonite chips and capped with concrete.

- 4 -

Before the ground was broken, the boring equipment was decontaminated with highpressure steam. The sampling equipment was manually decontaminated by removing loose soil, washing it in detergent, rinsing with clean tap water, and air drying the equipment between samples.

The disturbed split-spoon samples were visually classified, logged, and screened with a photo-ionization detector (PID) designed to detect rising organic vapors such as those released from paint solvents. The samples were then sealed in moisture-proof jars, placed on ice, and taken to the laboratory. The PID readings are listed in Table 1.

TABLE 1

PID READINGS

Results are given in parts per million (ppm)

Sample No.	Depth		<u>Result</u>	
		Boring 1	Boring 2	Boring 3
1A	0.5 - 2.5 feet	2.0*	5.0*	22.0*
2A	2.5 - 4.5 feet	0.4	0.6	0.6
3A	4.5 - 6.5 feet	0.6	0.6	0.2
4A	6.5 - 8.5 feet	ND.	0.8	0.2
5A	8.5 - 10.5 feet	0.4		1.0



(TABLE 1, PID READINGS, Continued)

Results are given in parts per million (ppm)

Sample No.	Depth		Result	
		Boring 1	Boring 2	Boring 3
6A	10.5 - 12.5 feet		***	0.2
7A	12.5 - 14.5 feet			0.2

*Submitted to laboratory for analysis

ND = None Detected

5.2 Groundwater

Groundwater was encountered in Borings 1 and 2 at depths ranging from 6.0 feet in Boring 2 to 7.5 feet in Boring 1. No groundwater was encountered in Boring 3.

5.3 Field Observations

In all of the borings, gray silty glacial till was encountered starting from the ground surface to depths of 6.0 to 14.5 feet.

A 2.5-foot-thick layer of water-saturated sand was encountered at a depth of 7.5 feet of Boring 1. Gray silty glacial till was encountered under this sand. Groundwater from this sand rose rapidly in the augers to a depth of three feet in this boring.

Boring 2 was advanced with a five-foot slotted auger. A 2.5-foot-thick layer of saturated sand was encountered at a depth of six feet in this boring. No water from this sand entered the slotted auger. After the augers were withdrawn, the water rose to a depth of 5.5 feet. A sample of this water was collected using a new disposable bailer. Gray silty glacial till was encountered under this sand.



No saturated sand was encountered in Boring 3 from the ground surface to a depth of 14.5 feet. This boring could not be advanced further due to physical limitations of the rig and the hardness of the glacial till.

5.4 Sample Analyses

The soil sample with the highest PID reading from each boring and the water sample from Boring 2 were submitted for laboratory analysis within 24 hours after the samples were collected.

These samples were analyzed for volatile organic compounds (VOC's) by EPA SW-846 Method 8240. The results are summarized in Table 2. The laboratory reports are included in Appendix E.

TABLE 2

LABORATORY RESULTS

VOLATILE ORGANIC COMPOUND ANALYSES

Location	Sample No.	Depth	PID Reading	Result
Boring 1	1-1A	0.5 - 2.5 feet	2.0 ppm*	All BDL**
Boring 2	`2-1A	0.5 - 2.5 feet	5.0 ppm	Toluene 0.2 mg/kg All Other VOC's*** BDL
Boring 3	3-1A	0.5 - 2.5 feet	22.0 ppm	Ethylbenzene 2.4 mg/kg Toluene 16 mg/kg Xylene 6.7 mg/kg All Other VOC's BDL
Boring 2	Water			All BDL

*Parts per million

**Below detection limits

***Volatile organic compounds



6.0 SUMMARY

No volatile organic compounds (VOC's) were detected by SW-846 Method 8240 in Soil Sample 1-1A from Boring 1 or in the water sample from Boring 2. Toluene was detected in Soil Sample 2-1A from Boring 2 at a level of 0.2 mg/kg and in Soil Sample 3-1A from Boring 3 at a level of 16 mg/kg. Ethylbenzene and xylene were also detected in the soil sample from Boring 3, at levels of 2.4 mg/kg and 6.7 mg/kg, respectively.

All of the samples analyzed were from the top 2-1/2 feet of the borings. The sample from Boring 3, where the highest levels of VOCs were found, was native soil that seemed to be fill from under an old loading dock where the aboveground storage tanks sat. The photo-ionization detector (PID) readings indicate that paint solvents probably did not migrate downward to any great extent at the locations sampled.

Thank you for selecting Bowser-Morner Associates, Inc. for this project. Your business is appreciated, and we look forward to working with you again soon. In the meantime, if you have any questions or if we can help you in any way, please let us know.

Sincerely,

BOWSER-MORNER ASSOCIATES, INC.

tohen D. Sommer

Stephen D. Sommer

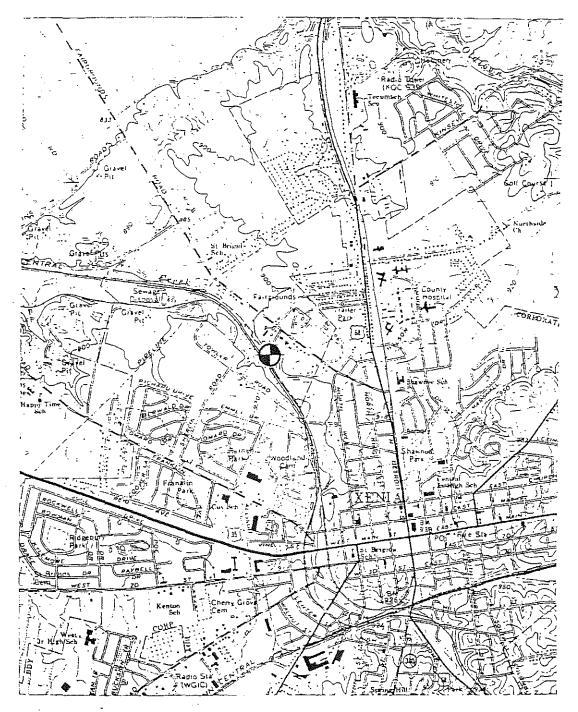
Hydrogeologist

SDS/mwt 3-Client 3-File



APPENDIX A SITE LOCATION MAP



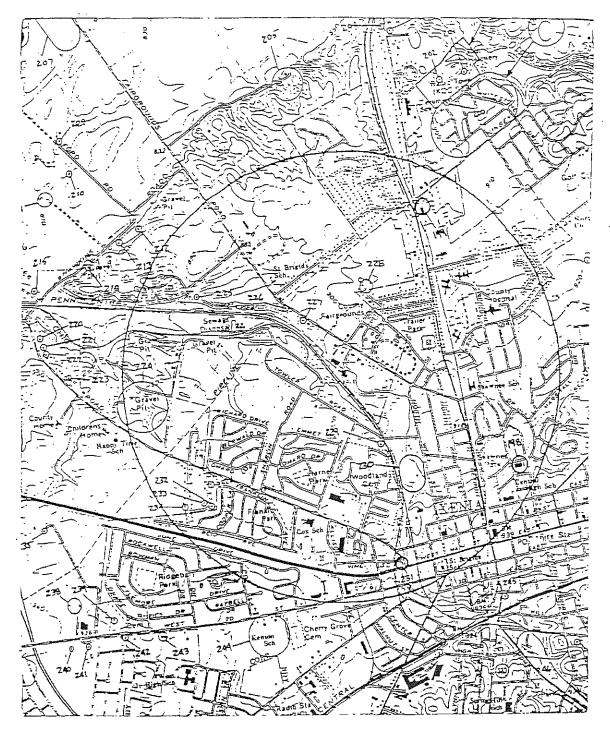


SITE LOCATION MAP



APPENDIX B OHIO DEPARTMENT OF NATURAL RESOURCES WATER WELL LOGS





WATER WELL LOCATIONS

Nº 318337

W".L LOG AND DRILLING RFOORT

State of Ohio

PLEASE USE PENCIL OR TYPEWRITER DO NOT USE INK.

DEPARTMENT OF NATURAL RESOURCES

Division of Water 1562 W. First Avenue

Columbus 12, Ohio

Section of Township Location of property CONSTRUCTION DETAILS BAILING OR PUMPING TEST Pumping Rate 4 G.P.M. Duration of test Length of casing 로스 Casing diameter Le Drawdown 110 ft Date 1/18/44 Type of screen_ Static level-depth to water 12 Type of pump Quality (clear, cloudy, taste, odor) Taken GPM Capacity of pump. Depth of pump setting. Pump installed by Date of completion. WELL LOG SKETCH SHOWING LOCATION Formations Locate in reference to numbered State Highways, St. Intersections, County roads, etc. Sandstone, shale, limestone, gravel and clay То From 2 Ft 0 Feet N. 20 Z 150 20 W. E. S. See reverse side for instructions 1/18/66 Drilling Firm Date Address ... Signed .

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Fountain Square
Columbus, Ohio 43224

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Division of Water 1562 W. First Avenue Columbus, Ohio

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DEPARTMENT OF NATURAL RESOURCES

Division of Water

65 S. Front St., Rm. 815 Phone (614) 469-2646

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State of Ohio DEPARTMENT OF NATURAL RESOURCES

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State of Ohio DEPARTMENT OF NATURAL RESOURCES

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1562 W. First Avenue DO NOT USE INK Columbus, Ohio 43212

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DEPARTMENT OF NATURAL RESOURCES
Division of Water
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Columbus, Ohio 43224

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ype of screen terms	the fiscree	2	Drawdown 30 ft Date 75 197
Type of pump	He -		Static level-depth to water
apacity of pump 20 @	PM -		Quality (clear, cloudy, taste, odor)
_epth of pump setting			
Date of completion.	135,1	97/	Pump installed by March
			CALLED TO THE STATE OF THE STAT
WELL LO	<u> </u>		SKETCH SHOWING LOCATION
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Drilling Firm Don W	ewer!	!	Date 35 [99]
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*If additional space is needed to complete well log, use next consecutive numbered form.

State of Ohio

DEPARTMENT OF NATURAL RESOURCES

Division of Water

NO CARBON PAPER

NECESSARY-

Phone (614) 459-2646

No. 409322

SELF-TRANSCRIBING 6	is S. Front S		• •	
, f	i	Columbus	, Ohjo 43215	
County Steve	Fownship 🗸	Porra	Section of Township	
Owner Seria Fitz	endra 9	+ mello	Address West Xema	. <i>O-</i>
2.7	1	4	Thurses The second	
Location of property Miss	1000	ul		
CONSTRUCTION	DETATIS		BAILING OR PUMPING T	
		27	(Specify one by circling)	
	th of casin	g 3/pt	Test Rate 30 G.P.M. Duration of	
(/ (/ 'n 'n '	rth of screen		Drawdown /5 ft. Date	- 25, 197)
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WELL LO	G*		SKETCH SHOWING LOC.	ATION
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Drilling Firm Son W	eave)		Date June 25	1471
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*If additional space is ne	eded to c	omplete v	well log, use next consecutive nu	mbered form.

W' L LOG AND DRILLING R' ORT OBIGINAL State of Ohio NO CARBON PAPER DEPARTMENT OF NATURAL RESOURCES 434011 NECESSARY-Division of Water SELF-TRANSCRIBING 65 S. Front St., Rm. 815 Phone (614) 469-2646 Celumbus, Ohio 43215 County. Section of Township Location of property. BAILING OR PUMPING TEST CONSTRUCTION DETAILS (Specify one by circling) Test Rate....3 Length of casing 27 ...G.P.M. Duration of test Casing diameter Drawdown_ ft. Date. ype of screen Length of screen Static level-depth to water Type of pump Quality (clear, cloudy, taste, odor)_ wepth of pump setting_ Pump installed by. Tate of completion WELL LOG* SKETCH SHOWING LOCATION Formations Locate in reference to numbered То Sandstone, shale, limestone, From State Highways, St. Intersections, County roads, etc. gravel and clay N. 0 Feet 爻 Ft E.

Drilling Firm Asy Mary

Address _____

Date 20 19.72

S.

Signed The Menne

*If additional space is needed to complete well log, use next consecutive numbered form

487807

WE'L LOG AND DRILLING REFORT

State of Ohio

DEPARTMENT OF NATURAL RESOURCES

Division of Geological Survey

NO CARBON PAPER

NECESSARY-

SELF-TRANSCRIBING

Fountain Square

Columbus, Ohio 43224 Phone (614) 466-5344

DWNER James Mer	ownship Jema	SECTION OF TOWNSHIP OR LOT NUMBER ADDRESS DACAGE			
LOCATION OF PROPERTY	Qf	ove,			
CONSTRUCTION D	ETAILS	BAILING OR PUMPING TEST (Specify one by circling)			
	th of casing 102 th of screen	Test rate // gpm Duration of test / hrs Drawdown 28 ft Date Oct 26, 76 Static level (depth to water) // G Quality (clear, cloudy, taste, odor) // F Pump installed by			
WELL LOG*		SKETCH SHOWING LOCATION			
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The soil of Place Charge. Stand Total of Stand Stand Trails (Trails)	0h 3 h 3 52 52 60 61 96 99 99 102	N Old Boute 35 W Bri No.			
DRILLING FIRM DA	meaner.	DATE CI 28, 76			
*If additional cross is posted to		537			

WELL LOG AND DRILLING TEPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1939 Fountain Square Drive
Columbus, Ohio 43224

688997

Permit Number ___

TYPE OR USE PEN SELF-TRANSCRIBING PRESS HARD!

1. 2

		Xen				
			DDRESS 188 Richard Sin			
CONSTRUCTION DET			SBAILING OR PUMPING TEST (specify one by circling)			
LASING			WELL TEST			
Casing Diameter 5 5 in Length of (Dasing2_	<u> 3 </u> 1	Test rate gpm Duration of test hrs.			
	Other		Drawdown (water level during pumping) 50 to			
ants: D Threaded & Welded D Solvent D	Other		Measured from: D top of casing Foround level D Other			
SCREEN	Managal		Static Level (depth to water) 5.5 ft. Date:			
rpe (wire wrapped, louvered, etc.)	Material	<u> </u>	Quality (clear, cloudy, taste, odor)			
Sel betweenft, and			Type of pump Capacity gpm			
CROUT	10		Pump set at t			
laterial Volume	used		Pump installed by			
Hethod of installation			Pittess Device D Adapter D Preassembled unit			
Depth: placed fromft_ to		ħ_	Use of Well			
: Rotary E Cable @ Augered @ Driven @ Dug	□ Other					
WELL LOG*			SKETCH SHOWING LOCATION			
Show color, texture, hardness, and formation: sandstone, shale, limestone, gravel, clay, sand	From	Τo	Show distances well lies from numbered state highways, street intersections, county roads, etc.			
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* If additional space is needed to complete well log, use next of	consecutively nu	ambered karm.	DNR 7802.88			
DRILLING FIRM TO THE TOTAL COLOR	<u> </u>		SIGNED			
ADDRESS US /3 43 65.	<u>. </u>		DATE			
CITY, STATE, ZIP Service, Olive	45-3	F5-	ODH REGISTRATION NUMBER			
		_	(232/1			
Completion of this form is re	equired by 152	71.05, Otvo Per	Assid Code - file within 30 days after completion of drilling.			

ORIGINAL COPY - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224

(= 1,528,000 ±2, = ELL LOG AND DRILLING KET KI

OHIO WATER RESOURCES BOARD Department of Public Works

Department of Public Works
553 E. Broad St., Columbus 15, Ohio

Nº 49157

County Inlesse	Township	Yenia	Section of Township or Lot Number			
Owner Charles /	, ,	/	Address Adding Office			
Location of property 122	ilcin	it of X	ening fried Sant of Gt 35			
CONSTRUCTION	DETAILS		PUMPING TEST			
Casing diameter Leng	gth of casing		Pumping rate G.P.M. Duration of test hrs.			
: pe of screenLeng	th of screen	,	Drawdown 40 ft Date			
Type of pump	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Developed capacity			
(pacity of pump	/		Static level of completed well ft.			
Depth of pump setting			Pump installed by Ourses			
WELL LO)G		SKETCH SHOWING LOCATION			
Formations Sandstone, shale, limestone, gravel and clay	From	To	Locate in reference to numbered State Highways, St. Intersections, County roads, etc.			
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Drilling Firm M.V.	la M		Date 4-6-54			
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Address $RR = 3 B \cdot 10^{-10}$			Signed			

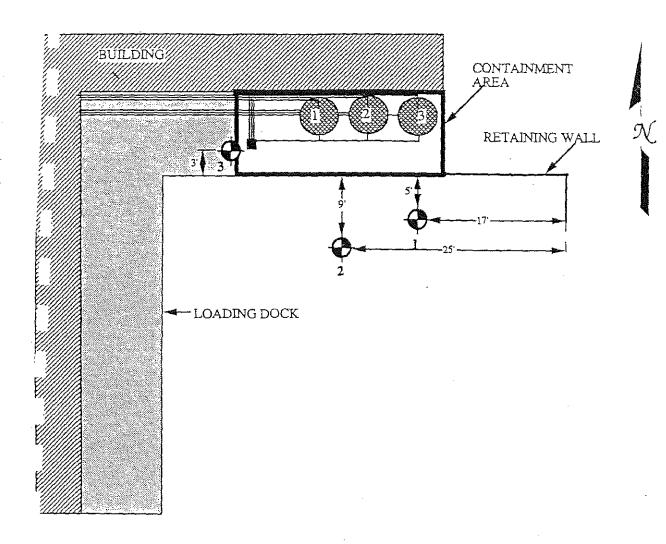
Drilling Firm

<u> </u>	WELL LO	OG AND	DRILLING P	TROPT		ozicin.
			of Ohio -		(CWC)	
` <u>`</u>	EPARTM:		ATURAL RES	OURCES		= 0.0
n			ous, Ohio	FNLA	Nº 168	708
County Orcene T	ownship	7		of Township ' umber	<u> </u>	- Thursday
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Owner		# OV	Address All	L	e entoot	
Location of property	<u>1 - 10 a a a a a a a a a a a a a a a a a a </u>	to the state of the	us jus	Though	HUMBER.	37
CONSTRUCTION D	ETAITS		Table Services		NG TEST	
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Casing diameter 5 1/6 Lengt	h of casing.	170	Pumping rate		1. Duration of te	st_7h
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Formations Sandstone, shale, limestone, gravel and clay	भ्रम्भाग्यः (ध । p From (Section 14 (Exh.To ed)	To State High	ocate in refer ways; St. Inter	ence to numbered rsections, County	l roads, etc.
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Signed__

APPENDIX C BORING LOCATION PLAN AND BORING LOGS







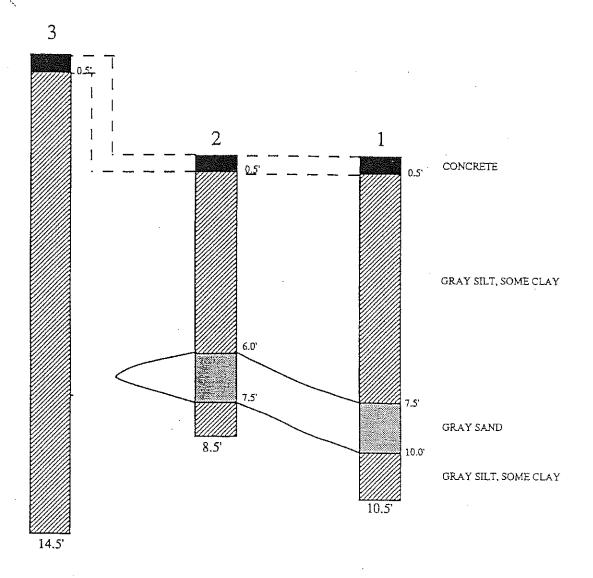
BORING LOCATION

PUMP LOCATION

-- PIPING

BORING LOCATION PLAN

CARBOLINE
ANKENEY MILL ROAD
XENIA, OHIO
12208 NOT TO SCALE 5-29-92



GENERALIZED SOIL PROFILE

CARBOLINE ANKENEY MILL ROAD XENIA, OHIO 12208 NOT TO SCALE 5-29-92

12208/jmm

Job No.

Log of Boring No. 1 Carboline Ankeney Mill Road, Xenia, Ohio

Alikeliey Will Road, Aeida, Olilo						
Boring Location: As shown on boring location plan Date State Surface Elevation: Not Taken Date Comp				/-		
Depth or Elevation:	Description of Material		Sample # & Type	Sample . Depth	Blows Per 6"	"N" Blows/ft. Or Core Rec.
Elevation:	Concrete Very stiff gray silt, trace clasand, trace gravel - damp As above - becomes hard As above - becomes very silvery dense gray sand, son trace silt - wet Hard gray silt, some clay, the Bottom of Boring at 10.5	riff ne gravel,	8 Type 1 A 2 A 3 A 4 A 5 A	0.5 - 2.5 2.5 - 4.5 4.5 - 6.5 6.5 - 8.5 8.5 - 10.5	Per 6" 8 -10-12-18 12-20-22-30 15- 9-20-32 12-22-33-65 11-17-22-30	22 42 29
30,	,					
Method:	Hollow Stem Auger : AW, SN	Initial Depth:	or Observa	ft	'==='	ampler olit-Spoon
· commonant	· datty will	Completion I	Depth: 3.0	tt	B.	İ

Depth After: _

hrs.

C. Shelby Tube

Log of Boring No. 2 Carboline Ankeney Mill Road, Xenia, Ohio

Boring Location: As shown on boring location plan Date Started: 05-21-92 Surface Elevation: Not Taken Date Completed: 05-21-92 Sample # Depth or Sample Blows "N" Blows/ft. & Type Elevation: Description of Material Depth Per 6" Or Core Rec. 0.0 Concrete Very stiff gray silt, some clay, trace 0.5 1A 0.5 - 2.55 - 6 -12-15 18 sand, trace gravel - moist 2.5 - 4.5 8 -15-19-28 2A 34 As above - becomes hard 8 -11-14-21 3A 4.5 - 6.5 25 5 Medium dense gray sand, some silt, 6.0' 4A 6.5 - 8.5 16-18-19-26 37 trace clay, trace gravel - wet 7.5' Hard gray silt, some clay, trace sand, trace gravel - moist Bottom of Boring at 8.5' 10' 30'

		Water Obs	Type Sampler	
Method:	Hollow Stem Auger	Initial Depth:	6.0	X A. Split-Spoon
Technician:	AW, SN	Completion Depth:	5.5	B. *
Job No.	12208/jmm	Depth After:	hrs	C. Shelby Tube

Log of Boring No. 3 Carboline Ankeney Mill Road, Xenia, Ohio

Surface E	Elevation: As shown on b	oring locatio	n plan	Date Stane		22-92 22-92
Depth or Elevation:	Description of Material		Sample #	Sample ·	Blows Per 6"	"N" Blows/ft, Or Core Rec.
0.0'	Concrete					·
0.5'	Medium stiff gray silt, son		1A	0.5 - 2.5	3-3-4-7	7
	some sand, trace gravel - II		2A	2.5 - 4.5	9 -12-17-19	29
	(ORIGINAL) As above, be very stiff	comes		. .		
 ,	very sun		3 A.	4.5 - 6.5	8 -14-20-20	34
	As above, becomes very hi	ard	4A .	6.5 - 8.5	18-22-18-34	40
	As above		5A	8.5 - 10.5	18-23-24-20	47
	As above		6A	10.5 - 12.5	39-43-48-60	91
	As above		7A	12.5 - 14.5	33-41-37-28	78
	As above					
	Bottom of Boring at 14.5' Auger refusal					
	I	Water	Observa	ations	Type S	ampler
Method:	Hollow Stem Auger	Initial Depth:	No	ne	X A. S	olit-Spoon
Technician	BT	Completion D	ompletion Depth: None			
Job No.	12208/jmm	Depth After			B. C. SI	helby Tube

APPENDIX D

LABORATORY RESULTS





Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401 513/236-8805

LABORATORY REPORT

To: 12208 Carboline

Attn: Stephen Sommer

Date: 06/03/92

Lab. No.: 9205318 001

METHOD

Sample No.: 99787

Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 1-1A 5-21-92 Boring 1 0.5-2.5

FT (Grab Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
VOLATILE ORGANICS Benzene Bromodichloromethane	BPQL BPQL	mg/Kg mg/Kg	0.1
Bromoform	BPQL	mg/Kg	0.3
Bromomethane	BPQL	mg/Kg	0.1
Carbon Tetrachloride	BPQL	mg/Kg	0.3
Chlorobenzene	BPQL		0.1
Chloroethane	BPQL		0.3
2-Chloroethylvinyl Ether	BPQL		0.5
Chloroform	BPQL	mg/Kg	0.3
Chloromethane	BPQL	mg/Kg	0.3
cis-1,3-Dichloropropene	BPQL	mg/Kg	0.1
Dibromochloromethane	BPQL	mg/Kg	0.1
l,l-Dichloroethane	BPQL		0.1
1,2-Dichloroethane	BPQL	mg/Kg	0.1 0.1
1,1-Dichloroethylene	BPQL BPQL		0.1
1,2-Dichloropropane Ethylbenzene	BPQL	mg/Kg mg/Kg	0.1
Methylene Chloride	BPQL	mg/Kg mg/Kg	0.3
1,1,2,2—Tetrachloroethane	BPOL		.0.1
Tetrachloroethylene	BPQL		0.1
Toluene	BPQL	mg/Kg	0.1
trans-1,2-Dichloroethylene	BPOL	mg/Kg	0.1
trans-1'3-Dichloropropene	BPÒL ⁻		0.1
1,1,1-Trichloroethane	BPQL	mg/Kg	0.3
1,1,2-Trichloroethane	BPQL		0.1
Trichloroethylene	₿₽QL	mg/Kg	0.1
Trichlorofluoromethane	BPQL		0.]
Vinyl Chloride	BPQL	mg/Kg	0.3



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LABORATORY REPORT

Xylene	BPQL	mg/Kg	0.3
Acetone	BPQL	mg/Kg	4
Acrolein	BPQL	mg/Kg	0.5
Acrylonitrile	BPQL	mg/Kg	0.4
Carbon Disulfide	BPQL	mg/Kg	0.3
Dibromomethane	BPQL	mg/Kg	0.3
Dichlorodifluoromethane	BPQL	mg/Kg	0.3
Methyl Butyl Ketone	BPQL	mg/Kg	2
Methyl Ethyl Ketone	BPQL	mg/Kg	4
Methyl Isobutyl Ketone	BPQL	mg/Kg	2
Stryene	BPQL	mg/Kg	0.3
1,2,3 Trichloropropane	BPQL	mg/Kg	0.5
Vinyl Acetate	BPQL	mg/Kg	0.5

Respectfully Submitted, BOWSER-MORNER, INC. Analytical Sciences Division

Manager Erik CV Wiegert/Manager Environmental Sciences Laboratory

ECW/VTB l -Client 2 -File

The shove analysis was performed in accompance with procedures listed in "ne <0 of the Code of Federal Regulations, Parts 136.6 and 261-Appendices II and III. In lieu of other arrangements, all samples recovered for this project will be insured at this laboratory for a period of 30 days. All reports remain the continental property of BOWSER-MORNER, INC. and no publication or distribution may be made without our expressed written consent, exceed as exprorted by contract.



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LABORATORY REPORT

To: 12208 Carboline

Attn: Stephen Sommer

Lab. No.:

Date: 06/03/92 No.: 9205318 002

Sample No.: 99788

Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 2-1A 5-21-92 Boring 2 0.5-2.5

FT (Grab Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
Benzene Bromodichloromethane Bromodichloromethane Bromomethane Carbon Tetrachloride Chlorobenzene Chloroethane 2-Chloroethylvinyl Ether Chloroform Chloromethane cis-1,3-Dichloropropene Dibromochloromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethylene 1,2-Dichloropropane Ethylbenzene Methylene Chloride 1,1:2,2-Tetrachloroethane Tetrachloroethylene Toluene trans-1,2-Dichloropropene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethylene Trichlorofluoromethane Trichlorofluoromethane Trichlorofluoromethane Trichlorofluoromethane Vinyl Chloride	BPQL BPQL BPQL BPQL BPQL BPQL BPQL BPQL	mg/Kg mg/Kg	0.1 0.3 0.3 0.1 0.3 0.1 0.3 0.5 0.3 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1



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LABORATORY REPO	DRT	Lab No.:	9205318	002
		Page 2		

Xylene Acetone Acrolein Acrylonitrile Carbon Disulfide Dibromomethane Dichlorodifluoromethane Methyl Butyl Ketone Methyl Ethyl Ketone Methyl Isobutyl Ketone Stryene 1,2,3 Trichloropropane Vinyl Acetate	BPQL mg/Kg	0.3 4 0.5 0.4 0.3 0.3 0.3 2 4 2 0.5 0.5
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Respectfully Submitted, BOWSER-MORNER, ANC. Analytical Sciences Division

Etro Cl Wiegert, Manager Environmental Sciences Laboratory

ECW/SAB 1 -Client 2 -File



Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401 513/236-8805

LABORATORY REPORT

To: 12208 Carboline

Attn: Stephen Sommer

Date: 06/03/92

Lab. No.: 9205318 003

Sample No.: 99789

Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 2-W 5-21-92 Boring 2 - Water

(Grab Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
ANALYTEVOLATILE ORGANICS Benzene Bromodichloromethane Bromoform Bromomethane Carbon Tetrachloride Chlorobenzene Chloroethylvinyl Ether Chloroform Chloromethane cis-1,3-Dichloropropene Dibromochloromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethylene 1,2-Dichloropropane Ethylbenzene Methylene Chloride 1,1,2,2-Tetrachloroethane Tetrachloroethylene Toluene trans-1,2-Dichloroethylene trans-1'3-Dichloropropene 1,1,1-Trichloroethane Trichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene Trichloroethylene	BPQL BPQL BPQL BPQL BPQL BPQL BPQL BPQL	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	
Vinyl Chloride	BPQL	ug/L	10



Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401 513/236-8805

LABOF	RATORY REPOR	RT Lab No. Page 2	: 9205318 003
Xylene Acetone Acrolein Acrylonitrile Carbon Disulfide Dibromomethane Dichlorodifluoromethane Methyl Butyl Ketone Methyl Ethyl Ketone	BPQL BPQL BPQL BPQL BPQL BPQL BPQL BPQL	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	10 100 20 200 10 10 10 100 200
Methyl Isobutyl Ketone Stryene 1,2,3 Trichloropropane Vinyl Acetate	BPQL BPQL BPQL BPQL	ug/L ug/L ug/L ug/L	100 10 20 20

Respectfully Submitted, BOWSER-MORNER, INC.

Analytical Sciences Division

Eric Cl/Megent Manager Environmental Sciences Laboratory

***************************************	-
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TROM	JLK.
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BOWSER-MORNER 4518 Taylorsville Road P.O. Box 51 Dayton, OH 45401-0838

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BOWSER-MORNER, INC., DISTRICT OFFICES 122 S. St. Clair St.

2416-B Overdrive Lexington, KY 40510 Toledo, OH 43696

P.O. Box 838

JOB NO.	. 1	PROJEC	T NA	ME					1		Pre	serva	lives				C	ontainer Type	
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Sample No.	DATE	TIME	Compos	Grab	L		N/DESCRIPTION		Sulfric A	Nitric A.		Other.	40 ml V	Liter Jar				·	
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2-11	5/24			X	Boring	20	2.5-2.5Ft 997	89 1			×			1		1	Voc	15 (8240)	
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Relinquish					Dale/T	ime/11/	Received by: (Signature)	Relin	quishe	id by: (Signali	ure)		Ī	Dale.	Time	Received by: (Signati	ire)
Relinquish	nd by: (S	ignatura)			Dale/1		Received for Laboratory (Signature)	iby:	5/22		/Time	9	Coo No.	ler	Coaler Temp.°C	•	r Flemark	9:	



Shipping: 4518 Taylorsville Rd. • Dayton, OH 45424 Mailing: P.O. Box 51 • Dayton, OH 45401 513/236-8805

LABORATORY REPORT

To: 12208 Carboline

Date: 06/03/92

Attn: Stephen Sommer

Lab. No.: Sample No.:

9205326 001 99880

Authorization:

On: One (1) Sample Received May 22, 1992 for Chemical Analysis.

Sample Identification: 3-1A 5/22/92 Boring 3 (Grab

Sample)

ANALYTE	RESULT	UNITS	METHOD LIMIT
ANALYTEVOLATILE ORGANICS Benzene Bromodichloromethane Bromomethane Carbon Tetrachloride Chlorobenzene Chloroethane 2-Chloroethylvinyl Ether Chloroform Chloromethane cis-1,3-Dichloropropene Dibromochloromethane 1,1-Dichloroethane 1,2-Dichloroethane	RESULT BPOL BPOL BPOL BPOL BPOL BPOL BPOL BPO	mg/Kg mg/Kg mg/Kkg mg/Kkg mg/Kkg mg/Kkg mg/Kkg mg/Kkg mg/Kkg mg/Kkg mg/Kkg	
1,1-Dichloroethylene 1,2-Dichloropropane Ethylbenzene Methylene Chloride 1,1,2,2-Tetrachloroethane Tetrachloroethylene Toluene trans-1,2-Dichloroethylene trans-1'3-Dichloropropene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethylene Trichlorofluoromethane Vinyl Chloride	BPQL BPQL BPQL BPQL BPQL BPQL BPQL BPQL	mg/Kg mg/Kgg/Kgg/Kgg/Kgg/Kgg/Kgg/Kgg mg/Kgg/Kgg/Kgg/Kgg/Kgg/Kgg/Kgg/Kgg/Kgg/K	0.1 0.1 0.3 0.1 0.1 0.1 0.1 0.3 0.1 0.1



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L	ABORATORY REPOR	T Lab No.: Pagé 2	9205326 001
Xylene Acetone Acrolein Acrylonitrile Carbon Disulfide Dibromomethane Dichlorodifluoromethane Methyl Butyl Ketone Methyl Ethyl Ketone Methyl Isobutyl Ketone Stryene 1,2,3 Trichloropropane Vinyl Acetate	BPQL BPQL BPQL BPQL BPQL BPQL BPQL BPQL	mg/Kg	0.3 0.5 0.4 0.3 0.3 0.3 2 4 2 0.5 0.5

Respectfully Submitted, BOWSER-MORNER, INCO Analytical Sciences Division

Eric E. Wiegert Manager Environmental Sciences Laboratory

ECW/VTB 1 -Client 2 -File

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BOWSER-MORNER 4518 Taylorsville Road P.O. Box 51 Dayton, OH 45401-0838

CHAIN OF CUSTODY RECORD

BOWSER-MORNER, INC., DISTRICT OFFICES
122 S. St. Clair St.
2416-B Overdrive P.O. Box 838

Lexington, KY 40510 Toledo, OH 43696

JOB NO.	· .	PROJECT NAME							Preservatives							Container Type 📝			
12208	;	Carboline						NO.		Suffric Acid Nitric Acid Tolor Personnel Ced Other 40 ml. VOA 500 M/ Co							7		
SAMPLER'S (Signature)						OF		\$\vec{\vec{y}}{ }				1 /	ð //						
Stophen D. Sommer BMI Sample DATE TIME SE LOCATION/DESCRIPTION No.				CON-	/	: أياً كرا	5/1	<i>[]</i>	40 ml 1/2	500 M/.	?/	/ /	REMA	ARKS					
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Sample No.	DATE	TIME	H	G G	LOCATION/DESCRI				Suffric Acid	Nitric Acid	/ ₺/	Other	\$	/ ਔ	<u> </u>				
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Relinquished by: (Signature) Date/Time Received by: (Signature) Stophon D. Sommer 5/22/2 2:56 PM			Relinquished by: (Signature)							Date	/Time	Received by: (Signature)							
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Relinquist	ned by: (S	ignature)			Date/1	lmo	Nacelved for Lationatory by (Signature)		5/2		/Time	56	Cool No.	ler	Coo	ler p.°C	flemar)	(9)	